

PRACTICAL
ESSAYS ON
MEDICAL
SUBJECTS. BY A
MEMBER OF...









PRACTICAL ESSAYS ON MEDICAL SUBJECTS.

by a Member
of the Royal College of Physicians of London
and Edinburgh.

Carlyle's Standard.

One. Name.

L O N D O N,
Printed for the AUTHOR.

1775.

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AN
ESSAY
ON THE SAFETY AND EFFICACY
OF
POISONS,
*Exhibited as medicines, when properly
dosed and administered;*
manifested by the use
of
CORROSIVE SUBLIMATE MERCURY,
LAUREL WATER, DEADLY NIGHTSHADE,
PURPLE FLOWERING FOXGLOVE
AND HENLOCK.



*On the safety and efficacy of poisons
exhibited as medicines.*

Reason and observation having fully convinced me, that the subtlety and bigness of remedies improperly used, often did harm; I was naturally inclined to believe, that the most violent and dangerous, if properly doled and administered, might likewise do good. And as the tick under the skin of the fowl, were generally obliged to a disagreeable and long performance to obtain relief; I thought, that whatever could be given in a narrow compass and would quickly produce it's effects, must prove not only most agreeable to the patient, but also most likely to do honour to the physician. animated by these considerations, and the natural affection that is proportionate as the size of any one article made it destructive, it's proper use might render it salutary; I made many experiments on brutes with different poisons as the most likely subjects to afford the wished for remedies, and though by mean thereof I did not discover their medical virtues, I was not only convinced, that in certain doses many of them

were not destructive, but might still by their union with other articles, be made so mild as not to be essentially operative; however the result of all my experiments never gave me sufficient courage to proscribe any of them as medecines, until by an accidental event, I was indubitably convinced that corrosive sublimate mercury, which was one of the poisons I had experimented with, was not so deleterious as was generally imagined and had some therapeutic virtues. The case was this: Sarah Hanes a poor woman exceedingly ignorant, being in a bad state of health and in a very unhappy situation, resolved to destroy herself; for that purpose she bought a quantity of corrosive sublimate mercury, and put it into a glass of water with an intention to drink it, but being timid suffered it to stand till the mercury was in a great part dissolved; so that when she began to drink it, the taste was so very disagreeable, that after she had taken a spoonful only she could swallow no more, and almost instantly perceiving her throat to be affected with a burning heat, she without being asked confessed her folly and begged for relief; whereupon a mid-finger was immediately dispatched to call me to her, but being then in the country three miles from town I was four hours after

without seeing her, during most part of which time she had been writhing violently and tortured with prickling burning pains in her mouth throat and stomach; the two former of which, as far as was in sight, had on them several blisters and great inflammation, though the people about her had very judiciously supply'd her with plenty of warm water and oil to mitigate her complain't, and which constantly preserved her from her natural fits, notwithstanding she was severely pun-
ished for her impious indiscretions, by the fore-
most of her mouth and stomach rendering her
many days unable to eat without great un-
grish; though infallitely on my arrival I gave
her draughts of lime water and oil with inter-
mediate sicks of tincture of sulphur in an
excellent decoction made proportionate with man-
na and fennel; by the use whereof for a few
weeks she grew perfectly well, and quite free
from a most inveterate itch and those oblique
pocky symptoms, that had claded the force of a long sicc of mercury in other
shapes. Hence I was firmly perswaded that
this malady in judicious hands might be
safely treated of; and making my remarks
upon it to one Mr. Halford a very celebrated
old practitioner with whom I was intimate, he
told me, that in cases wherein his season had

hem at a loss from the obscurity of the disorder, he had often prescribed it with uncommon success; and for my further conviction referred me to the examination of two or three of the patients to whom he had administered it, the cure of each of whom spoke greatly in its favour. The form in which this gentleman prescribed it was this: To eight grains of the corrective siccative mercury he joined an equal quantity of opium and camphor and three times its weight of pure salt of tartar, the whole of which after being rubbed together for some time, he made into eight pills with a different quantity of extract of horehound, and called them by the name of pilulas fine pura, one of which he gave every, or every other night, as occasion required; by means whereof he informed me, that he had performed many astonishing cures, without having ever experienced the least ill consequence from their use, and even often without their producing any sensible operation. This report greatly strengthened my opinion of the virtues of this medicine, but considering that the great efficacy of the mercury in the siccative, solely depended on its union with the sand and salt, and that it could be decomposed by its junction with the alkali of tartar, I did not wonder when I observed the proportion referred to the siccative, that the pills do com-

posed should be in very full and gentle, especially as it was most probable, that if by the slight manner of the article any degree of stimulating property remained in the sublimate, the opium given in conjunction therewith would restrain its action, in case the complexion should fail of that effect. I looked therefore on the experience, which this gentleman had had with the sublimate, to be in no respect satisfactory in demonstrating either its virtue or safety, having been then lately convinced by an information I had had from the very learned and ingenious Dr. Wall of Worcester, that the effects of sublimate mercury were totally destroyed by an alkaline salt, so he had fortinately experienced upon himself, after having followed a large dose of it distilled in distilled water, instead of another solution he intended to take. The circumstance was this. The Doctor living not a very great distance from the celebrated purging springs of Cheltenham in Gloucestershire, to which his patients had frequent recourse, he thought it his duty to enquire into their nature and properties, that he might speak of them with propriety and knowledge, and for that purpose being provided with a variety of necessary articles to make experiments by addition to the waters at their fountain head, he made

a wife to the spring, to observe what phenomena they would afford there, different to what they did by the same addition at a distance from their source. Amongst their articles to be added to the water, was a solution of corrosive sublimate in distilled rain water and another of an easily emulsified tincture of vitriol; the first of which the Doctor poured into a glass of the water instead of the latrine, and hastily drank the whole of it before he discovered his error; but immediately after finding his mistake and having in his pocket another phial containing a filtered solution of the pure alkali of tartar, he diluted that with some water in another glass, and as soon as possible drank it on the latrine; by means whereof and promoting the evacuation two or three times successively with a sufficient quantity of warm water, he almost indirectly cured his disease by bringing them up together as yellow as the yolks of eggs without being sensible of the least injury from the accident the next day. Encouraged by the preceding particulars and the practice of that celebrated surgeon Whistler who does however to our country, in which he informs us that he had frequently with success exhibited drops of a strong solution of corrosive sublimate with spirit of wine, in common water grub, as a cure for venereal complaints; and finding also

aff's the following in the ninth part of a grain well mixed with a dram of the suspended juice of the elder berry, stands recommended by the distinguished engineer Boulenger in his treatise on the power of medicines, as the best fomentation in the like disorder, I looked upon it as a sufficient authority to justify it's use, and having a patient under my care of a very phlegmatic constitution, who could take nothing in defiance and with whom I had reason to believe misery might be breasted in the cure of an inveterate heartburn that had been troublesome for years; I diffused three grains of saltpetre in two ounces of coldwater and one ounce of syrup of violets, so he takes a large spoonfull every morning, which in three days not only perfectly freed her of the pain that had tormented her so long, which she experienced with the highest impatience, but on the fifth day from her taking the first dose, had evidently seized her gouts though she had taken a grain and an half only of the mercury; which I no sooner observed but I immediately gave her a purge which operated very briskly; yet in despite thereof and all I could do to prevent it, a diarrhoea came on and continued to exacerbate for fifteen days, when it began to decline and wear off gradually, without

ever being followed with any return of her old complaint. Alarmed by this unexpected event, although it was accompanied with the perfect cure of my patient, being then but young and unestablished in my profession, I did not dare to persevere in making experiments with so known a poison; but three years after when those circumstances were changed, I wished should a proper opportunity offer to try it again, but never to exhibit it without it's junction with a purgative lest a physician should repeat me again as it had done in the former case. That exhibited it was no long time before a proper opportunity offered by a number of patients being put under my care, several of whom had many remanal symptoms of the first infection, to cure which I directed a scruple of the common foblement mercury to be dissolved in a marble mortar with a drop or two of water, then well mixed with a like quantity of powdered camphire and afterwards beat into a mass with three drams of the latter pill coction of the London Dispensatory, and so made to be divided into forty pills of equal weight; one or two of which, according to the strength of my patient, I ordered to be taken every night, by means whereof and drinking freely of mallow-tea, I had the satisfaction to see all of

then expeditiously recover without the least ill effects happening to any one of them, either while the medicine was in use or afterwards. The experience I had in the year 1749. does which amongst the common people I have ever had recourse in the like case to these pills, nor have I in the course of any case ever had occasion for the use of any other means, except now and then in particular habits a bleeding or two and in the end a gentle cathartic, but these helps have indeed been very seldom necessary. To seize all the particular instances of the kind which I have accidentally treated with the medicine, would be sufficient for a large volume, yet I should frankly have been encouraged to have vented on the following without a purgative any more, had it not been recommended to the world under the direction of that deservedly eminent physician Baster van Swieten by whose indisputable and for the welfare of the public we have a most excellent comment abounding with true learning and knowledge on (*) the aphorism of the 3d.

(*) On this book my worthy and ingenious friend the late Dr. James Mahan, in his very excellent and learned history of Health, page 452. quotes the third, amongst of the precepts or art of preventing disease, has the following words. "It is astonishing that the

Illustriss Boerhaave, whereby the lessons of that great luminary in physick, are delivered down to following generations with very great improvement, and I will boldly affirm, that it is a work if duly regarded will make more medical students good physicians, and more empirical Doctors rational practitioners than any other publication in the language of medicine.

The physician who so former recommended to the publick by this learned commentator, who advised it to be taken dissolved in brandy, but I had the pleasure to find, that from the confidence the world had in his judgment, it was by many especially our surgeons in the army readily enhanced; and we had every day more and more instances made of its expediency.

It was recommended to the publick in a volume, in Boerhaave's system of anatomy and curing diseases, all that we should know the actions and motions in that faculty, yet as far as I am able to judge, there is given any precept directed to their application, which is necessary to give the young physician a due insight into the nature and use of almost every different member in the human body. This several physicians and others qualified in the practice of physick, ought to be taught in every university; and is usually explained and illustrated with sensible remarks and observations, by the professor of his profession, the learned and honest Dr. Rutherford, at the university of Edinburgh.

py effects, by the influence whence it then got admission into our general hospitals, where it was freely and daily try'd with good success, yet not without several instances of its failure and even of disastrous effects to a few, in consequence whence it had both its partisans and opponents and by many persons who had been rapidly cured by it relapsing into their former complaints, perhaps from their debility from it to such, such a prejudice prevailed against it, that it fell into disuse in the hospitals. But in private practice, the ease with which it was taken and the certainty that it had very often succeeded, preserved it many advocates, amongst which, soon the glass I had long before conceived of the salinaria and the good it had done it do in the above described pills, I own I was one; but being credibly informed by several of my medical brethren, that of those who had taken it there were many where it had failed, and those also who by its use had not only spoiled their stomachs but had likewise been tortured with great pain and bloody fluxes, though they confessed that were it had been properly purified in, it had failed in but very few instances, I resolved to try it in another manner. And judging its superior efficacy over other materials to depend

on it's greater solubility, and that the mildness of it's action in the mucous tubes of the body arose from the degree of it's dilution. — Seeing the solution of it in brandy was apt to precipitate, I thought the infusible it had some times coagulated might have action than thereby; from this consideration I made many experiments with different menstruum to discover an best solvent, and amongst them all found none equal to common water which had been previously distilled, and which without dilution I could never find to hold it long in perfect solution so as not to precipitate; I therefore in order to prevent it's too hasty preparation when I might have occasion to preferable it, directed the frozen grain of the sulphure should be dissolved in a pot of common water and kept as a standard in the apothecary's shop, under the name of the aqueous solution of sulphure, and to be particularly cautious that it was always prepared with a glass pessle and manner that it's end might neither annoy or be attacked by any metallic sulphure and a decomposita salts; from a neglect of which caution, there is too much reason to believe that it has either lost it's efficacy or been rendered incapable of entering into the blood so as to produce the necessary changes in the secondaries of vessels, and has likewise brought

on that violent irritation in the first pustules which in some instances has attended in us; from an eye to which I began with dressing two drams of the above solution to be administered at different drugges within every twenty four hours, mixed in thirty two drams of a decoction made by boiling two ounces of farfaraea root and half a dram of the bark of the eucalyptus root in two quarts of water to thirty four ounces and sweetening the whole with a sufficient quantity of sugar, but experience soon taught me that the medicine so made was too strong and would not only be more painfull but more effectual also, if only one dram instead of two of the aqueous solution above described was added to the decoction, I therefore kept to that proportion in preparing this medicine, until even in that quantity it had a purgative effect, in which case I constantly altered the proportion of the former to the latter, till it had lost that quality; conclusion that the longer it layed in the body the more purgative it would prove, and I have done lamentable injuries in which by a quart of the decoction, wherein has been mixed from six drams to an ounce of the solution, taken every twenty four hours in such doses as not to offend the stomach and continued for twenty or thirty days successively, wounding at the la-

will equally wish several oaths confirm my purpose of demonstrating that this poison properly stored and administered may be a salutary medicine.

One Mary Neal of the Parish of Fladbury in the County of Worcester, a woman about fifty years old of a thin spare habit of body and pale complexion, for fifteen years had been more or less subject to a disease of her skin, which at different times affected different parts; it always began with a flux of rheumatis, attended with redness and heat, and after having continued for a few days put on the appearance of a burn and discharged a great quantity of sharp impetuous water which spread the complaint on the part it ran over, in this flux it generally continued for eight or ten days, when it gradually subsided and leaving a sore open the part disengaged but soon after shewed scillagins and ran the same course in another place, in such a manner that she was truly a stranger to a weeks ease or health. For the relief of this malady she had applied to many very able physicians, by whom at different times she had been treated with internal purgatives, salves, ointments, vinegars, aqua-vitae, Sopha, vegetable and animal balsams, the bark and lime water, besides which she had had recourse to the purging waters of Chelmsford and to a mill dam, and was by

that means forming medicated for a while but never lasting — Under these circumstances to partly her solicitation rather than from my confidence of it's proving materially beneficial, I recommended to her trial the aqueous infusion of Sassafras in the following description as it is above described, and advised her at the same time finally to adhere to a milk and feed diet; all which she punctually observed with little or no effect for about four or five days, but after that time it began to make her sweat profusely in the night and to afford her considerable relief, which increased so fast that within a fortnight from the commencement of her sweating her complaints disappeared, yet she continued the course for another month, and from that time which is now six years, has never had the least relapse or any other disorder vexed it, but has been happily blessed with perfect health.

Mrs. Mary Penn of Banbury in Oxfordshire aged thirty five, a gross corpulent woman of violent disposition but well regulated as to the benefit of nature, had been many years afflicted with several Sooth ulcers in her legs and a great number of blisters on her skin, the itch of which were very offensive to the smell, exceeding painful at times, and constantly discharged a watery humor; all which complaints though

of so long standing, were radically cured by the use of the before mentioned solution and decoction, without drawing of it more than a pint a day or continuing longer than three weeks.

Miss Anne Riley of Powich near Worcester, a young lady of florid complexion and tolerable good health, of the age of eighteen; and Miss Mary Leigh a very fair delicate child of only seven years old, were both of them several months affected with a very violent watery discharge from behind their ears, which in both of them was so very acid as to corrode the skin all round about the part that was affected; it was attended with a most violent itching, appeared very dry and as though it had been scalded; their complaints in either of them gave way to divers, cooling purges, repeated doses of calomel, bilious or tinctures, every of which in their cases had been tryed for their relief; yet they were severally cured by the use of this decoction and solution in less than three weeks, as many others have been, who with a like fluxion behind their ears have become the objects of my care.

I could recite many other cases similar to those in which this medicine has been equally successful in perfectly curing the most obstinate eruptions complaints attended with a most

discharge, but I much耽so consider that where the eruptions have been dry and scaly without being accompanied with vesicular symptoms or suppuration, I do not recollect a single instance in which it has recovered.

Mrs. Mary^t. White of Evesham in Worcesterhire, a tender delicate postwoman of a brown hair and pale complexion, had been afflicted when she was very young with a most violent fever which terminated critically by an abscess in her nose, the opening whereof the surgeon who attended her said she would could never be healed as not having a very short time to open again, or to have her nose then gain when the part was healed. She was also at times severely tormented with rheumatic pains in her other limbs, and was frequently afflicted with a natural diarrhoea, on the cessation whereof she generally got easy for eight or ten days: except in the defined time. For these complaints she had taken mercurial and ammoniacal purges, gummous decoctions, and an infinite number of other remedies, till finding them all ineffectual she gave up her hopes of cure from any — In this state I advised her to the trial of the fallopion and decoction, which she entered upon cheerfully and by taking only a quart of it every twenty four hours for fifteen days successively was

happily freed from all her complaints; she then healed her poor cooled and although her damaged arm was greatly wasted, yet it is now as strong as the other, and she has not since had the least return of any one symptom of her disorder.

Mrs. Elizabeth Martin of Pemorth in the County of Gloucester of singular confirmation and naturally healthy, was about the age of thirty very severely afflicted with the natural small pox, and with the secondary fever consequent thereon was in the utmost danger all the twenty eight day, so that it was with the greatest difficulty that her life was preserved, and even after the danger of her life was over, her eyes were so injured by the disease that she was for months nearly deprived of her sight, having their external membranes almost constantly covered with painful ulcerations & great inflammation, from which she was at last relieved by a continued course of mercury milk diet and copious bleedings. but two years after from an accidental cold the disorder returned as violent as ever, and it was feared that she would be quite blind, the same course of medication which had succeeded with her before and carried beyond her cure having proved ineffectual, under these circumstances having lost all of

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medicines & left all hopes of cure for above two months, I begged her trial of this decoction & fomentation of which she took a pint a day for six weeks, and before the expiration thereof was perfectly recovered of her sight, the inflammation had left her & she had no remaining mark after disease but weakness & an inability to bear a strong light, from both which by the use of the bark inwardly & sponge dipped in cold water applied to her eyes externally, she was soon freed and never afterwards had the least relapse.

Mr. William Smith a tradesman in the town of Evesham before mentioned, a man much accustomed to drinking and an irregular way of life, of a pale complexion and thin constitution, between forty and fifty years of age, had for three years together been severely tormented with an obstinate sciatica and sounding rheumatic pain, by which at times he was for several weeks confined to his bed; and for his cure had taken many repeated medicinal purges, turpeth root, wormwood, electuary with common ginseng and turpentine, had been frequently used and used both hot and cold baths with liniment to the part, which though they sometimes relieved him for a short time produced no lasting good effect; yet after the failure of them all, by a course of the decoction and fomentation before described taken in small

take once every twenty four hours for one month, and the constant use of a flannel waistcoat next has then he was radically cured; as have many others who have been under my care for the like complaints; though I must confess this medicine is not infallible in all wandering pains fibritious and rheumatities, for I have often tried it in these (confidentially); yet it has been so frequently successful in such complaints, that where they do not yield to common means it well deserves a fair trial; especially as it's general operation is a fine purification without any one disagreeable symptom where it's effects are properly attended to.

From a due reflection upon the preceding cases and other similar instances which have happened in the course of my experience with the corrective fibritious mixture, I am induced to believe that it operates principally on the lymph by powerfully attenuating or correcting that part of the blood in such as have it too thick or viscous, and from the expedient relief it has afforded in several persons who have been tormented with wandering pains which have been deemed to have been rheumatic and gouty, and it's having no such effect on others under the like complaints, there is reason to conclude, that those persons so afflicted in whom it has been successful have generally if not always had a consti-

not truly prove for the origin of their virtues.

The very small quantity of mercury contained in the filaments used in these cales, and the similarity evident in the figure of the particles of filaments with those of green mercury or calomel, demonstrably shew the insufficiency of that theory which attributes the virtues of mercury to the gravity or figure of it's particles alone; it being certain that if it's great powers arose from their proportion, they could never be produced as they are by so very small a dose of the filaments, and would most certainly follow, which they do not, from a somewhat larger dose of the green mercury or calomel; it being impossible for the filaments to impinge the momentum of the bloods impetus by it's weight or to excite by it's figure any effect we might not with equal reason except from the calomel as well as from the filaments, as they are both contained with the same articles used by the same means. If we prepossess with any fixed opinion we daily weigh their circumstances, with the different effects which follows from different preparations of mercury, & with those which are common to it under all it's forms; it is impossible if we are at all acquainted with the animal economy, and the common laws of hydrostatics, that we can have any difficulty in

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and sufficient reasons for a clear conviction of every argument advanced to demonstrate, that the efficacy of mercury depends either on its gravity or figure. We must look therefore another hypothesis to explain its effects, before we can confidently on the principles of theory direct its use; though we may safely do it from the knowledge we have acquired by observation and experience. To discover the true means by which this great medicine brings about its effects is an enquiry worthy indeed of the most able physician, and being discontinued, may probably lead to greater and more fatal consequences than any which have ever yet been ascribed to this wonderful metallic fluid; but to prosecute the search in this field until its limited nature will not admit, yet I hope to be excused for dropping a few hints which may possibly be of use to such as have leisure and ability to undertake the task.

By chemical process it is now demonstrated that the fusible and penetrating principle of every solvent acts upon the body in different ways by means only of its particular affinity with that body.

That the fusible or penetrating principle inherent in certain bodies one to another, however it may be diluted or divided by any fluid or other substance, with which it is diffused

ved or united, if it unites with any thing else to which it has a greater affinity than to that with which it was before blended, will move strongly against that with which it has the greater affinity than be retained by that with which it was before engaged.

That is proportion of the penetrating principle of solvents have had opportunity of uniting with bodies with which they have the greatest affinity, they thereby loose the power of acting on other bodies with which they have less affinity, until they are united in such proportion together as not requisite to their perfect saturation, and how strid sever they may have been in their own nature in their separate states, by such union they become what chymists call deliquescent.

To demonstrate their position by some familiar examples — If the acid of the first, which has a stronger affinity with iron than copper be with copper than mercury, be put into a proportionate for making a solution in the exact quantity sufficient to dissolve a dram of mercury, and a small quantity of copper be dissolved therein; in proportion as the acid has been employed by the copper it will have lost it's solvent power on the mercury; though when the unengaged acid by the copper is heated with the mer-

cury, and the copper and mercury are quite dissolved therein; if steel be added to the solution, the acid in which the solution was made having a greater affinity with the steel than with the copper or mercury, will soon itself with the steel & drop the other two in distinct precipitates.

So little if the acid of the salt be fully saturated with mercury, its acidity will be unapproachable; and the mercury which was mild itself before its union with the acid will be rendered violently saline, but if filings of iron or an alkaline salt is blended with the composition, the acid will quit the mercury; and its acquired violence from its union with the acid be destroyed, in consequence of the greater affinity of the metallic earth or alkaline salt with the acid, than the acid had with the mercury.

Chemistry likewise teaches us that when from the union of two bodies together by their attractive power on each other, their solvent or penetrating principle goes on the other not only becomes saturated, but also that also they lose their further penetrability on each other in consequence of such saturation, they become able to penetrate and assault other bodies, on which before they were found they had not the least power: Of this in the blancher

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of the Academy of Surgery of Paris we have a full proof, by the several masses made with distilled vinegar and spirit of salt armagnac, which is commonly called Maderman's spirit, dissolving the saltness of mercury which neither the vinegar or spirit of salt armagnac alone was capable of affording.

Besides these particulars there is a material salt well known to every labourer in the apothecaries shops, which though very simple is not the weakest proof of the different degrees of affinity or dissipation of mercury to salts with different fixitures; or of the greater rectitude of one salt than another to attract and bind itself with that fixture, which is the attraction of mercury with different fixed fixations in a common matter; in which manner if it be rubbed with this salt it will quickly and readily join itself in a very large proportion, with creases of some more slowly and in a less proportion, and with absolute certainty without very long iteration, and even then but in a very small quantity and very loosely.

Another particular of great importance for us to know and relied upon is this, that in proportion as any three principle capable of dissolving or uniting mercury with mercury approaches to perfect dissolution by all units

with it; it even when united therewith becomes much more cold and gentle in it's action or effects on the body; as a proof of this mercury dulcis is much less operative than subnitrate, calmed than mercurous dolor, and the purgative milder than calomel; and I have had proofs in the course of my experience of this observation being equally true in regard to the action of mercury, from it's union with the aconitum of the blood and stomach, as with different salts; for in goodly patients and particularly in them who have a disposition to acidity in the stomach, I have repeatedly found that a very large dose of the crude mercury united by trituration with any glutinous or albuminous substance, produced much milder effects than a small dose, and was infinitely less liable to fulvous; for which I could affix no probable reason, but that of the natural screensay by the larger quantity of mercury being more perfectly intermixed, than it could possibly be by the smaller dose, and which did admitted however not the least difficulty to account for the effect.

I will only add one other observation well known to most practitioners in medicine — Rumphius has long since shown mercury to be the true antiveneral remedy, and that by it's being used so as to bring on a fulvous, it was

D. 49

very rare a patient was not cured by it; in so much that salivation and mercury was called the means of the cure; but nature in some patients spontaneously not producing a salivation or other discharge, after a proper use of the mercury for it, in whom the mercury equally produced the cure, as in those it salivated, it was clearly demonstrated, that it was not the salivation or excretion excited by the mercury that was the means of the cure, but that the cure followed (specifically) by the admixture and confusance of the mercury in the blood for a given time.

From properly considering these several particulars, have we not then reason to think, that as mercury unites more readily with one fluid than another, and deliquesces or destroys the active quality of those fluids it unites with, by its union with them; and as the marked astringency of animal fluids is of a thinnish nature, different one from the other in different dispositions, that the abounding astringency in the reverend dispositions has a greater affinity with mercury, than with the astringency of other dispositions, or with the humours of the body in an healthy state, and that by its union therewith, it becomes deliquesced, and looses that corrosive disposition it naturally had before its union with the mercury? If this be the case, as there is much

reason to believe it is from the discharge of a humor, not being necessary for its cure, and the cure following the use of mercury without it, there will be no difficulty to account, why so long a course of mercury is requisite to be provided in, before the astringency is dissolved which has fixed itself in the most venous parts of circulation, so that astringency is naturally removed till it is sloped by the mercury, why a specific astringent like mercury should be more efficient when it does not purge than when it does, why mercury united with salts should do more than crude mercury; and why saponate which is so perfectly dissoluble and infinitely divisible, should cleanse blood itself with the lymph and render the affected parts, than any other preparation of mercury. If we consider that the humor is a humor of the lymph; that the lymph is greater more than one half of the whole blood, and of medicines extremely applied or internally taken, unless such as are perfectly dissoluble with water and are not excretable, the part which enters into the blood is exquisitely minute, and perhaps not more in quantity than the visible dots we exhibit of the sabbath — What wonders do we see performed by the bark, and how small is the quantity of it which enters the blood, and which part only does the barking.

not? What effects have we not lost from the use of Cheshire waters in removing internal obstructions? how small in quantity is the fluid they contain to enable them to do it, yet who can dispute their virtues? It is enough that we know them; and as by innumerable unexpected events we have been led into many very interesting discoveries, which human prudence could never have devised, of which we have been guided to a proper use by sagacious reasoning, we ought in duty to ascribe their benefits to their true source, and gratefully to acknowledge the bounty of that Providence, whose goodness in accident has done more for our real welfare than all our wisdom.

It is not only the corrective substances necessary to neutrality by no stalk known to be defective, that under proper management may be made an instrument of health, but also many vegetable substances which are of the most violent and deleterious quality, as is evident from the happy effects which have been produced by proper doses of hemlock water, the powdered leaves of the deadly nightshade, the juice of the purple flowering foxglove and the extract of hemlock, of which in the order they here stand I shall notice a few instances.

The leaves resemble cherry leaves, the leaves whited by distillation afford an almond like flavor,

flower; and have by diffusion been used instead of the kernels of apricots or peaches in the preparation of retin, and of the common black cherries for making the black cherry water of the shops. Having by the particular occasions published of it in the philosophical transactions or meetings of the royal society in London been passed the oath wherein and certain of vegetabile poisons, the ingenious Dr. Langrish, with a view to discover the nature of it's action upon the animal body, made many experiments with it on brutes, by which he clearly demonstrated, that it most powerfully attenuates the serum of the blood and kills only by it's stupefying action on the nervous system, finding therefore many cases which would not admit of the use of any stimulating medicines, and in which attention was absolutely necessary, I determined, as often as my fish fell to my care, cautiously and fairly to try what the distilled water of the lassel would do; and for that purpose, I gave it from one to two tea-spoonfulls, or from thirty to fifty drops for a child, three or four times a day, beginning always with the least, and augmenting it gradually to the largest quantity, without ever observing any evil symptom to arise from it's use, though I most constantly observed my intention of attenuating the blood, and without having it at all, a car-

confidence that can not be found of any other known article in the materia medica, and of which following cases are demonstrative proofs.

M^r. Thomas Rovay of Enniskillen, a gentleman whose family had been subject to leucocy, whose mother had died of a cancer, and who was himself of a bilious and melancholic constitution; about the fifth year of his age was much afflicted with an oblique gallbladder in his hand, and with a carbuncle in his hand and ear, for which he had been bled, had an ulcer in his neck, had tried various emollients, and been repeatedly purged, without any material relief. The blood which was taken from his arm was excessively thick and infested, and after it had stood twenty four hours, it yielded scarce one fourth part of its quantity of lymph; which was looked upon to be the chief cause of the symptoms that affected him. On this account I recommended to his wife, she distilled water of horehound in the proportion of one pound of the leaves to a pint of water; of which he at first took only thirty drops, twice a day in fine rosemary tea; but finding no ill effect from that, he gradually augmented the dose to double the quantity, and repeated it five or six times every twenty four hours, and thereby grew every day better and better. When he had continued it a fortnight, to see the state of his blood,

four ounces of it only was drawn from him, when its inflammatory flux was much relieved, and the quantity of its lymph greatly increased; he was therefore desired to perspire in the medicine, which he did for three weeks longer, at which time he was free from all his complaints, and having by his own desire, another two drachms of blood taken from his arm, to see if the texture of it was further altered since his former bleeding; it then appeared so far from being in an inflamed state, or of too thick a consistency; that it was quite fluid on its surface, and after standing six hours, separated more than one half of its quantity into perfect lymph, which being as large a proportion as it ought, I desired him to desist from the medicine, and without ever after having any necessity to return to it any more, he continued to enjoy both clearness and health.

John Jones an Indianress hard labouring man, a carpenter by trade, fainted in the first town of Eycethorpe; after having been for some months much troubled with a rheumatism, gradually before affected with a great difficulty of breathing, was greatly oppressed with a load of very rough phlegm, had a full hard pulse and an oblique chill gout about the region of his liver, he was hot blooded, and his blood was so very thick that after standing above

ferry hours, it did not yield one fourth of its quantity in seven, two or three months before this he had quit blood, and was very apprehensive of doing so again — At different times for these complaints he had used blisters, and takes very freely of pelicans and neutral salts, without any sensible benefit; but within fourteen days by taking breast water as directed in the above case, with the assistance of two small bleedings, he was perfectly cured, and his blood reduced so that, as on standing, to separate more than one half of it's quantity, of well coloured lymph.

On mentioning their influence to my very worthy friend the learned and ingenious Dr. Cameron of Worcester, he cordially told me, that he had often used an infusion of this plant in oblique applications of the liver with very great advantage; and that by means of a compress made with a meal from millet seeds, and a strong infusion of the breast leaves, or it's distilled water, he had not only greatly relieved many, but cured some very hard fibrous tumours of a cancerous appearance, several of which before it's application had threatened the worst of consequences; and the truth of it, from the gentleman known integrity is not to be questioned.

Whether or not this medicine, used in the form or any other manner, would fully



diffuse, or break the inflammatory quality observable in the form of the blood of all native people, I have never yet experienced, but if by a previous affection of the lungs, the sputum become slightly mucus, it certainly grawes much, and mortis a thin mucus; though in those infusions wherein that circumstance is constantly present, it ought not to be resperred upon, least the delirium, which constantly distresses or hinders people in that disease, by happening at the same time medicina p. m. etc. should be undeviatingly directed to it's deleterious quality, as fatal effects have already been recorded of it's abuse, in the papers of the philosophical transactions above referred to.

The deadly nightshade in India called *Belladonna* or *Solanum* *Album* is another plant of the potatoos tribe, the fruit of which by the common people, is distinguished by the name of poison berry. — It's leaves have of late been strongly recommended by the ingenious Doctor Stenck physician at Vienna, and M. Gaukler a celebrated surgeon in this city; both of whom have favoured us with many infusions of it's good effects in cancerous disorders, but of which, though I have tried it on five different individuals, I never found it do any thing worthy of notice, except in the following instance; yet I have the resolution to day, that it

was not productive of the least relief to either of the patients on whom it was not successful.

Mr. Meyrick Field of Exeter, a gentleman of a very strong physique constitution, and who had been accustomed to enjoy a good state of health; was very suddenly seized, with a most violent pain in his throat & tongue, which tormented him with suffocation, and disabled him to eat or speak — this affliction he was first attended by Dr. Wall of Worcester, who supposing the disease to be gouty, treated him accordingly but to no purpose; the disorder gradually increasing for about three weeks, when his pain was become very little, but his tongue even to it's very tip, was affected with an almost gangrenous hardness, without being accompanied with the least degree of fever; in this state I was consulted for him with the above mentioned gentleman, who passed with me in opinion, that it had a cancerous appearance, and was a very likely case to be relieved by the nightshade; we therefore prescribed it to him, in the dose of two grains only every night, in which quantity the very first night it excited fever and an insupportable distress by urine; but after taking the third dose, the end of the tongue began to regain it's motion, and by continuing it for ten days longer,

the disorder perfectly disappeared without ever recurring, or being followed with any other complaint, though it is now about six years ago.

It is remarkable that the great discharge of urine, which followed the first use of the plant in this singular complaint, was very liquid and colourless; whereas as such urine flows in great abundance from persons in the most violent hysterical complaints, on the discharge whereof the secrete how violent forever generally issues, we may most reasonably conclude, that the hardness of the tongue afflicting this gentleman, arose only from some violent fluids in the retarding blood vessels from the affected part; and that the cure was performed by its arodysic antiperiodic power, rather than by any diabolical quality. Its effects in rheumatism and those other painful disorders, in which I have been informed by some very eminent practitioners, that it sits in a most powerful antidote, gives great reason to warrant that opinion.

The efficacy of the expressed juice of foxglove, described by Bonnott under the name of *digitalis purpurea*, this author, of which an account has been long a sharp competition in site for scrophulous disorders, well deserves the particular notice; it is indeed not commonly ranked among poisons, yet is of a ve-

by divine grace in its operation, and has by its divine grace produced of dead effects; it therefore not improperly claims a place in this essay.

Such has been its astonishing effects in the hands of those ignorant and rash persons; that their success with it has been a reproach to persons of distinguished ability and character; of which I shall here mention a few instances.

One John Brown a taylor of Evesham, a youth of about eighteen years old, was afflicted with stræphalous ulcers in several places, but particularly with one through the small bones of his right foot, the whole of which had a very livid appearance, and the leg was greatly emaciated; every thing that could be thought of for his misery dungeon after dungeon, was successively tried at different times for ten years together, but without any benefit; the discharge from the foot was so very abundant, fetidous, and offensive to the smell. It was looked upon as certain that he would soon become helpless to prevent which, as his gout was still good, amputation was proposed, and the day fixed upon for its performance, on the report whereof Mrs. Davies the wife of a neighbouring shotmaster, officially went to the house, and told the lad's mother, that if she would follow her advice, she would assist with

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her life, for the cure of her son and the prevalence of his leg; from the desire of which she embraced the offer, and the following measure were entered upon the very next day. She got a quantity of the fresh leaves of Foxglove, had them beat well in a marble mortar and the juice expressed out, of this she gave a table spoonful in half a pint of warm beer, and the leaves only from which the juice was taken, she applied to the ulcer; the lad remained very violently, and at very short intervals continued so to do for near four hours; when it took the contrary turn, & passed him briskly for the remainder of the day, the purging then stopped, and his tongue and gums growing sore, his mouth ran water for three days successively, as though he had been delirious. The applications to the ulcers were daily renewed, by which after the fifth twenty four hours they were freed from pain; these faeces discharge considerably lessened, & very soon after ceased, then the dross went off, and their colour became perfectly staid. His complexion visibly increased, and he in every respect daily gained health and strength. Fourteen days after the first dose, he repeated it a second time in the same quantity and manner, when it operated as the former had done; and thereby in less than another month, without repeating the medicine any more, he

was perfectly cured, and has ever since remained well, though it is now ten years since the operation was made.

Sarah May of the same town, a young woman of about twenty-eight years of age, afflicted with a strabismus affect in one eye which nearly deprived her of sight, two large ulcers in her upper lip which was of four times its natural size; gibbous tumors on the joints of her fingers, and an almost constant pain in her limbs; for which she had used the calcined sponge, sandy magnesia, milk-sop, lime water, and a decoction of the woods, without any material benefit; was prevailed upon by the same woman, to take a table spoonful of the foregoing juice, in the manner it was given in the last described case, and which in a short time, greatly mitigated all her symptoms; but its operation was so violent that she could not be prevailed upon to take it again, though she was as much urged to it as possible, and there was reason to expect if she did, that it would have completed her cure.

Mr. Thomas Moline another person of Breville, had a strabismus nymphæ of a very livid colour on his right elbow, in which the end of the humerus, was much enlarged; from the

pain in which for above three years he had been tortured more or less incessantly; he had tried for his relief an infinity of the most approved medicines, but to no purpose; yet by four doses only of this juice at a month's interval between each, he was perfectly cured without ever subjecting him to the same disorder, though the joints never returned back to it's proper size, but remained somewhat more enlarged than natural.

So well received was this juice in the case of scrophulous complaints, from the use that had been made with it in such cases by the dressmakers wife; that it became a common thing for the school masters in the town of Exeter, to administer it indiscriminately to the young children under their care, who had the least tincture of that disorder; until one Sarah Barker, a child of eight years old, taking an over dose of it, for a complaint she had in her eyes, died in its operation, and put a stop to the practice.

These several particulars, I communicated to my worthy friends, the physicians and the surgeons of the Worcester Infirmary; in which were many patients afflicted with scrophulous complaints, that had resisted the force of the best known means for their cure; but their gentleness concerning the operation of this

medicine, to depend on a suffice allusion (it that was necessary to be correlated); instead of giving the juice in the simple manner before mentioned, in which it had been therofold; cautiously gave only a simple infusion of the leaves, with the fixed vegetable acid, extract of tartar; and even that in such small quantities, as were sufficient to curate a rasher ulcer, without either purging or vomiting, and in that manner finding it to do no good, they desisted from it's further trial, as a medicine of too deadly a nature to be taken internally; though from it's external use in ulcers and carbuncles, they had experienced it's great good effects in many instances.

I now come to the virtues of the beet-root, which is the most important of all the leathiferous tribe of vegetables, that has been introduced into practice for a fibrous medicine; I have referred for the closing subject of this essay. This plant is described by Bonnabit, under the name of the *more sugar beet*, or, the greater common beetroot; until of late years, except by some daring ignorant people, it was only topically applied; but we have now an extract prepared of its expressed juice, strongly recommended to be internally taken; by that zealous apothecary into medicine, Dr. Stock physician at Vienna; who prescribes it, as a

specific in several of their disorders which have been looked upon as incurable; particularly in inveterate scrofula, cancer, chronic indurations of the glands, and all constitutional aches; in all which, he has related his success with it in so candid and open a manner, as cannot fail to enforce belief; although the influences he has given us of it's effects, are truly astonishing; but least his record of these fails should alone be insufficient, to overcome prevailing prophecies against the use of the medicine; he has joined to it the prevailing influence of Baron Von Swartzen's approval, by telling us, that under his inspection, most of the instances he has given us were made, and if we consider the conspicuous light in which that gentleman deservedly stands in the physical world; we cannot but look upon any publication against the use of a medicine, which has proved beneficial by experiment, and is recommended by him; to arise from it's failure, through want of accuracy in it's preparation, or skill in it's use; it being certain, that a person so eminent in his profession would never attempt to impose falsehoods on the world, by supporting them as truths, at the expense of his honor, and without having the least prospect of advantage for the hoaxed; it would be doing violence to a man's honor.

F 11

so believe it's possibility. Considering therefore, that the published effects of this medicine, were such as might be relied upon; I determined to give it a fair trial, in all such cases as might offer to my care, which were similar to those, in which Dr. Stork had successfully given it; and the cases I tried it in were the following.

Mary Thomas, of Camden in Gloucestershire, applied to me for advice in the twenty-eighth year of her age; when upon examination I found, that from her fourteenth year she had had the benefit of nature regularly, but that from her being ten years old she had been more or less subject to epileptic fits, and that in her eighteenth year she had perceived an hard indolent tumour, of the size of a nut in her left breast; which in six months time increased to the size of a pidgeon's egg, was extremely disagreeable, & painful when touched; whence she had the greatest dread of it's becoming cancerous, her grandmother having died of a disease in her breast, which was judged to be of that nature; under these circumstances I had but little hope of alleviating her ailment, but thinking it a very proper case to try the extract of hawthorn, I immediately prescribed it to her; and began at first, by giving it to her three times a day, in the quantity of two grains only for a dose,

for which, I gradually increased to twelve grains; to that at last she took thirty six grains of it every day constantly, and continued it without interruption in that quantity, from the tenth of May, to the beginning of January following, but without any perceptible diminution of the humor; though it totally removed the pain she had in it, and what was more remarkable; from the time she had taken it two months, she had no return of any symptom of the epileptic kind.

Anne Savory of Bath aged thirty six, a very corpulent woman, much disposed to the drinking of spiritsuous liquors, was afflicted with a cancer from a blow upon her right breast, which she imagined to have augmented, and which was very difficultly performed and well healed, within the space of ten weeks from the operation. But about two years after, she began to complain with violent wandering pains in her brain, and a frequent burning heat in different parts of her body; after the continuance of which for about three months, she was suddenly stricken with a fever, which continued to continue upon her for four days without intermission; when she perceived an ulcerous sore in her left arm, that gradually grew more and more troublesome, so as to acquire a close inflection; by which there was

found a very small hardness, of an irregular figure, which she could not bear to have touched; the tumour in a very few days became perceptibly larger, and all her other complaints discontinued, as that augmented; in about two months it had a livid colour, with every other appearance that could make it dangerous; in this deplorable situation, almost without hope, I put her upon the air of the extract of hemlock, of which I will give her three grains every four hours, which doth by little and little wan enlarged to twelve grains, and so continued for eight months successively; during all which time, she wore upon the part a small quilt made with flannel and cotton, and kept constantly moist, with a mixture made with two ounces of the extract of hemlock, dissolved in sixteen ounces of Mynshew's spirit; by which though the tumour was not removed, it was kept from increasing, and she was freed from her pain; so that she has since had two years tolerable health, without any alarming symptom. In relation her fears, though she has not always reported the asperities, did upon her, of abstaining from her accustomed cordials, which is alone, a sufficient cause to apprise such a complaint in most occasions.

Mary Adams, of Broadway in the County of Wexford, aged twenty two years, for some time

she had felt an hard indolent tumor, under the nipple of her left breast, which was constantly large without being painful, but in a few months after its first appearance, becoming irregular in her mammae, she had frequent dartings in it that were exceedingly troublesome; the nipple gradually contracted sick, and was almost lost into the breast. By one or two of the surgeons that saw it, it was declared to be cancerous; they therefore caused her with a gentle merciful once a week, and gave her a light preparation of black hellebore with myrrh, on the intermission days; which soon restored her to the regular benefit of nature, but without any material relief to the disorder of her breast; on which account she was put upon a course of salient sponge with soap and the like; the repetition of salicypiles, antimonial preparations, and every other means commonly used for mastoeous complaints, but without any advantage; yet by a continual performance for six months, in the siph of two grains of the extract of hemlock three times a day, and the application of a cloth wet in a solution of it, in Myrobalanus spirit, externally; she was perfectly cured & remains well to this day.

William Court a lily strong labouring young man, had several large indolent glands

under his chin, which were of long standing, and at times had ulcerated in different places, the which every thing that could be thought of by those that attended him, had been unsuccessfully tried, but not giving up all hope; he communicated his complaint to me; when I immediately put him upon a draught of the herb-leaf, of which he took the extract internally in the quantity of two drachms a day, and had a poultice of the leaves externally applied; in which he persisted for full seven months, at the end whereof he was perfectly recovered, and remains well to this day.

Mr. Anne Morris a gentleman of thirty five years of age, of a very spare thin habit, and of irregular meathairness; was gradually attacked with a dimness of sight, without any visible defect in her eyes; besides which she had frequent drawing pains in the womb and an almost constant flor albus, with a great tension and freeling in her belly; of all which symptoms, by the use of a bark impregnated with the virtues of this plant, and eight drachms of its extract taken three times a day for two months, the got quite free, except of the defect in her eyes; and which, though it was not cured was greatly diminished, and would most probably have totally left her in another month or two, if she

could have been prevailed upon to have paraded in the streets; but which was inseparable from the great uneasiness she had conceived to moderate, by having taken it so long.

Mr. Jones a delicate young woman of the parish of Densworth Wiltshire, had been for several months affected with a swelling in her knee, which in a manner destroyed the motion of the joint, and was of a very livid colour; in which there it continued without amendment from any thing that was tried till it opened of itself, in five or six different places, and was excessively painful; yet by the extract of hemlock internally taken, in the quantity of seven grains for a dose three times a day; and a warm bath prepared of the same plant, applied to the affected limb for half an hour morning and night, she was perfectly cured, and remains in good health to this hour, though it is now five years since her recovery.

Thomas Terri a hulky young shoemaker, subject to a number of hard glands under his skin, some of which were greatly inflamed, and some ulcerous, from whence flowed a great discharge of thin water; was also affected with great pain in all his limbs, and had a large number of sporadic eruptions all

over his body for the cure of which he applied to me, who put him upon the use of the extract of hemlock, which he took in a full dose, and for five weeks together, without lessening the disorder under his chin, or his suspensory, though it perfectly freed him from the pain in his back.

Mr. Thomas Whitfield a young gentleman of a very tall thin delicate habit, in the eighteenth year of his age, was accidentally kicked by a horse on his left scrotum, which by blisters, purging, and emplasters nearly cicatris, was so relieved, as to leave only a small hardness at one end of it, as the part called the epididymis, to which he paid no sort of regard for the years, but being thus attacked with a fever, it became in a few days very painful, increased greatly in size, and at last formed several large fistulous openings, through its coverings, from whence for full three months, there issued a great discharge of a very ichorous nature; without materially lessening the size of the tumour, or the pain that attended it. In this case as he was a person of consequence, many physicians and surgeons were consulted, and consequently all possible means tried for his cure; but from none of them did he find the least help, until I advised him to the use of the extract of hemlock, of which

divided into three parts, he took a flounce a day, and had a compunction and constraint of it applied to the part, and thereby in the space of ten weeks without any other help, he regained perfect health.

In all these cases the medicine had this play, no other remedy being given during it's use but occasionally a dose of sausse, laxative electuary, or an aloece pill, if a too long constrictio of the belly rendered them necessary; whence it cannot be questioned, but that the benefit which followed it's use in these several instances, was undubitably the effect of the medicine, and of that alone.

The great relief which many persons have experienced from this medicine in mitigating severe pain, have induced some to try it in the gout, and I have been assured by one gentleman who was greatly tortured with that disease, and had nearly left the use of his limbs by it; that he measured upmiflable, from the hopes that if it did not cure him, it would relieve him from his torture by an easy death; he began therefore boldly, and took ten grains of the extract for his first dose; in which quantity he repeated it twice a day for a month, when finding himself better, he took it three times a day for another month, and then increased the dose to fifteen grains, and so

continued it for eleven months; growing gradually better all the time, and at the end of it being perfectly free from pain, he therefore began to leave it off by the few slow degrees as he had entered upon it; and has now passed two years without either taking the medicine, or feeling any return of his disorder.

Besides this last case, which is here related upon the credit of a friend, two or three other instances have stood within the course of my own experience, of violent wandering pains looked upon to be gouty entirely ceasing, while the patient, with a decoction of madder and other aperient roots were administered for the cure of some collateral tumours on which they had no effect; but as the several patients to whom this happened were all females, and troubled at the same time with uterine obstructions which went off before their gouty pains localized their affection, to a return of their blemishes of nature, more than to the specific quality of the decoction, and for that reason omit their particular delineation in this essay.

It is not only in the cases here published in which I have with success given this medicine, for I have often with equal advantage prescribed it many others similar to those; yet I must acknowledge that it has much often failed than procured me the wished for

effects; many of the afflicted having been obliged to leave it off, from the violent heat, swelling, redness and distress of sight it occasioned; though not one of them all, whom it so affected, had the least lasting injury from it's use; and I must also perceive, that in many patients to whom I have given it for local complaints, who could not bear with it intensely, I have with the greatest success applied it externally; and also that of those to whom I have hitherto prohibited it, I do not know an individual that has been free cured of his disorder, by any other means. And from these considerations though it be certain that the use of these kind of remedies are attended with some degree of danger; now we know that they have salutary effects in certain diseases, in which no other medicines avail; it is indispensably our duty to have recourse to them in all such disorders; that while there is a sufficient force of nature remaining to co-operate with them, we may not lose their benefit; yet their utility in such cases, can afford no pretence for calling them to our assistance where less hazardous means are found to be effectual; nor can it justify those who are not bound to the healing art, and thereby taught to foresee and anticipate the dangers which may result from their misapplication, to meddle with

them; as in their hands, if they do good it can be only by chance; and if a contrary effect follows, it is but what ought to be expected and must be absolutely unavoidable. When therefore evil events arise from the mis of their mistakes, let us always inquire of they are not the consequence of their misapplication before we condemn the mistakes lest the discredit be imputed thereto, which is the result only of the ignorance of the presbyters; and is all that's necessary in which we find they have done good from a judicious aim, let us also from the same spirit of justice strike the branch which sets them there, to show first recommends, who being happy in their deficiency, has unmercifully communicated them to the world, from a disposition of humanity, and for the public good.

AN
ESSAY
ON
DR. JURIN'S AND CHITTICK'S
LITHONTRIPTICS,
SHEWING
THE NATURE AND ACTION,
of
ALKALINE LIXIVIUMS
ON STONY CONCRETIONS FROM THE URINE
IN THE KIDNEYS AND BLADDER;
WITH THE BEST METHOD FOR THEIR
PREPARATION.



*On Dr. Jarvis's and Clinch's Lithontripia
showing the nature and action of alkaline
lithium on fleshy concretions &c.*

Concerning liquids and solidified substances.

The natural rather than rational dread of the knife, to calcareous patients; has hitherto kept the ingenious busy in the search for an effectual lithotriptor; and from the immense degree of hardness, with which fleshy concretions are formed in the animal body, their solvents have been sought for from the most sovereign of medicines. Hence, on the admission of any medicine having adequate force, to break the cohesion between the particles of such concretions; another question has naturally arose, relative to the safety of such medicines when internally administered, than which question, as to the use of alkaline lithium the following consideration & remarks have been produced, with an intent only to satisfy the mind of the inquirer, without any thoughts of their being offered to the public: But as various instances of benefit from the use of the lithium, has proved it a medicine of real efficacy; that no one may be disengaged from it's trial by an account of any objection which

have been silent to it, by those who have taken it improperly; the following pages are published, in hopes of exciting a more able hand, to carry the truths they contain by direct and effective expostions, into evident proofs; or by the like means, manifest that they are groundless and without foundation.

Alkaline salts and lime water, have been both many years used to dissolve calculous concretions in the kidneys and bladder; and although both have been found to make great steps towards it, neither of them alone have proved sufficiently efficacious to complete the work; thence, and thence having been observed, that by the extreame use of their salts and lime, when used together, effects were produced which neither of them could perform when separately employed; physicians were naturally led to the trial of common soap lye, well knowing soap-lye to be a combination of the vegetable alkaline salts and quick-lime; made by washing out the可dissoluble part of Rauhia popashes and fresh burnt lime mixed together in equal proportions, until the water employed therin is so saturated therewith, as to have easily one pds of it wash measure, be yet sixteen ounces alkalinic in weight.

The lye, or washing thus prepared, distinguished by the name of capital soap-lye;

is sold by Lyttelbury and Langly, Apothecaries in Broad street London, under the name of Dr. Junc's Lithomycite; and is with uncommon success administered as a foment by Mr. Chirick, who of late trusts no one with the possession of his medicine, till he himself has mixed it with the liquor in which it is to be taken.

A pint bottle of their capital soap lye, bought of Mr. Langly, under the name of Dr. Junc's Lye, was for the dose, being well mixed by shaking I took exactly one ounce of it by avoirdupois weight, and subjected it to filtration through thin paper; the clear liquor that passed the filter I then mixed with syrup of vinters, and it thereby became of a strong deep green colour, to this green liquor I added by slow degrees a sufficient quantity of spirit of vitriol, to restore to the mixture the natural blue colour of the vitriol, which was not obtained until two hundred and fifty grains of it in weight had been added thereto; upon which on the addition of muriac acid, which I made to it drop by drop, stirring it as it was added; no further instant motion or effervescence was produced, and the mixture began to assume a red or rather crimson complexion; hence I was convinced that all the alkaline salt the filtered Lye had contained, was by the vitriolic acid perfectly neutralized.

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misled. My new purpose was to discover the exact quantity of alkaline salt which had been thus neutralized, and which was contained in this essence of Dr. Jurish medicine.

For this purpose, I easily weighed twenty grains of pure fixed alkaline salt, and dissolved it in a wine glass with one ounce of distilled rain water; I then added thereto drop by drop of the same spirit of vitriol, with which I had made the above experiment, until the alkaline salt dissolved in it, was thereby perfectly neutralized, which was manifested by it's not effervescing with the further addition of spirit, or changing the natural colour of the water by the addition of more spirit to the mixture; and this point of saturation of the alkali was obtained by exactly seventy grains in weight of the acid, whence it is manifest, that as twenty grains of alkaline salt, took to this experiment seventy grains of acid to neutralize it, and as the filtrated liquor from an ounce of borax, took two hundred and fifty grains of acid, to neutralize that in like manner, there must be dissolved in every ounce of the borax, twenty two grains of alkaline salt, and of course in every pint of it: two ounces three drachms & twelve grains.

Being thus ascertained of the exact proportion of alkaline salt contained in a given

quantity of this liquor, which has by degrees been proved not only this, but also otherwise; I looked upon it of natural consequence, in the next place to be examined, whether the quantity of alkaline salt, which I found in it, was so much as water would suspend in perfect solution; or a particular quantity only, integrally dissolved therein, by means whereof, it was enabled to answer those purposes for which it is now recommended. To be satisfied of this last, I took two drachms of diluted muriatic acid, and added to it by degrees of the same pure fixed alkaline salt, as long as the water manifested any solvent power thereto; by which I found, that the two drachms of water even undiluted with acid, was able perfectly to dissolve twenty five grains of the salt, and it is certain that by the help of heat it will dissolve much more; but without further test, it is hence evident, that an alkaline liquor may be made above four times as strong, as what is now sold for medicinal use. Let us hence judge, what must be thought of those practitioners, who instead of this approved remedy; recommend to be taken in the same quantity, as strong a liquor, as can possibly be prepared; when this which is now used, the strength whereof may naturally be above four times augmented; is by

too long a continuance, by too large doses, or by being taken in an improper vehicle; capable alone of producing the worst of mischiefs.

The flattered intruder being thus lawfully ejected, and a antidote of a more fixed nature which with the water and salts would not pass the pores of the paper, being left thereon, the paper to prevent any waste of the reduction, was perfectly dried with it; and was then found to be thirteen grains heavier than it was before it was used as a filter; I then rubbed this paper and separated from it rather more than twelve grains of a very fine powder, not perfectly white, but of an olive colour; somewhat approaching in appearance the mild, or common caulin of the shops.

The powder very soon attracted the moisture of the air, and thereby manifested itself to be partly fibrous, and not merely a fixed lime or calcareous earth, as might reasonably have been imagined. I therefore submitted this powder to further examination, by adding to it an ounce of distilled rain water, which after standing an hour, I decanted from what it had precipitated; and added a like quantity of fresh distilled water to the remainder. This solution I repeated a second third and fourth time; after which, I put all the several washings together with the remaining sulphur into the same glass

glass and passed from it all that did not precipitate upon four hours standing. The waters of these washings were of a more alkaline taste, and after resting a whole night remained a milky-alkali, which yielded no precipitation; but by the addition of a few drops of the acid of vario, generated innumerable small air bubbles, which adhered to the bottom and sides of the glass; the milky-alkali gradually disappeared and it became perfectly transparent. The precipitate, from which the milky-alkali was decanted after standing four hours, being dried, weighed exactly nine grains; which is four grains less, than the tenth fraction left upon the paper through which it was filtered; and which four grains is what gave the above observed milky-alkali to the several washings; hence it appears, that these four grains if not perfectly fine as themselves, are nevertheless somewhat of a false nature; and though not diffusible in the small quantity of water used in the experiments, are nevertheless of so light a nature as to be perfectly suspenable in pure distilled water, without sedimenting at all, and it is not improbable if it be earth, but that it may have been sent to light by means of it's union with so large a proportion of the fixed alkaline salts as is contained in the medium; it being con-

min, that fixed alkaline salts have a different power on many species of abiding earth. Of this light calcareous formifiable earth, whether it be earth or lith, as four grains is observable from one ounce of the leuvisium, forty four grains must be contained in every plaz.

We now come to examine their nine grains of fixed abiding earth, which remained perfectly indissoluble, and were precipitated from their several ablations. This earth, of which one ounce of the leuvisium afforded nine grains, and which exists therein in the proportion of one hundred and fifty one grains to a plaz, was found upon experiment, to dissolve very readily in distilled vinegar, and any mild acid, but by its union with the vitriolic acid, formed a silicate, thereby demonstrating that it is of a very different nature to that very light earth, which was separated by the repeated washings, of what remained in the paper upon full filtering the leuvisium, as the vitriolic acid perfectly dissolved that, and rendered this quite indissoluble.

From these experiments and events; nothing can be more evident, than that by the union of three ducches & fifteen grains of a light calcareous earth; two ounces three

ounces and twelve grains of a fixed alkali; and thirteen ounces sherry one grain of pure water, one-pint or sixteen ounces panada of this infusion is prepared. Every moderate fixed tea-spoonful of which, weighs one scruple, or the twenty-fourth part of an ounce; twice which quantity, is the dose preferred to be taken of it two or three times a day, while the continuance of the disease requires it's use.

But it must be observed, that when Dr. Burch gives this medicine; he exhibits it more freely, and in tea or some other thin diuise, in which manner it frequently offendeth the stomach; whence by never giving it in a larger quantity than two scruples at a time, and sherry mixing it in some salt meadigous liquor as weak beer, which has been the rule with Mr. Charrick; that inconvenience is perfectly prevented.

If we have a mindfull to what has proceeded, it is plain that two tea-spoonfuls of it in measure, or two scruples of it in weight, contain only six grains of alkali; and one grain is an half of calomel; each; one third of which only, is in a manner digestible by it's union with the alkali, and the other two thirds of it perfectly lost.

But granting, what fews have imagined, that the whole green and unburnt instead of being calcareous earth, is an animal bone, if we consider that it is not given dry, but after it has been kept sometimes steeped in water, we may be sure that it is impossible it should act in like, or produce any different effects, to what any other simple alkali-bone such would be capable of producing, even if it had never been calcined; and if we consider, how often in a day, a much larger dose than six grains of pure alkaline salt has without the least injury been repeatedly given, for days together in rheumatic and other complaints; we shall find very little or no reason to confine the use of soap-lies, which is injurious only, like all other powerful medicines when improperly administered. And it is unjust, to look upon that as the property of a remedy, which is the effect of an alkali only.

Having by the decomposition of this medicine not only discovered it's constituent parts, but also their respective proportion one to the other; we are thereby taught, how the same compound may be again made, and perhaps with some degree of improvement; as it is certain, that the sizes of different vegetables, and the time of different hours, which are now used in it's preparation; will ever afford

more or less dry, and be more or less dissoluble in water; according to the manner of their being burned, and ashes or lime, and to the nature of the plants or stones from which they were severally prepared; whence the strength and effects of the liquor made with them, will be still variable.

To guard therefore against such uncertainty in the power of this remedy, is of no small consequence, and if instead of ashes and common lime, a pure alkaline salt prepared from common ashes or tarts, and a lime made from the shells of oysters be employed in its preparation, it will be effectually done, for it is then possible that the medicine so made, should a different medicine be more or less powerful, or differ materially in any respect; therefore the following process seems preferable to any other, for the preparation of it.

Take of pure fixed alkaline salt, made by evaporating to dryness a liquor, either of potash, or of the ashes of holly, or box wood, all which are sold by the dry sellers in London, under the different names of Russian ashes, of holly, or salts, or of the alkaline salt made by the calcination of nitre and tartar, commonly called salt of tartar; as may be most easily had, two ounces and one half, Of

ether shells thus calcined, into a perforated box, and grinded powdered one pound, let them be well mixed together, and calcined again in a large crucible, covered on the top with a common tile, until the mixture be red hot in a clear charcoal fire; then let it cool, and reduce the mass it affords in a marble mortar to a gross powder, the whole of which put into a filter over a large earthen pan, and pour upon it two quarts of boiling water, and when that is passed, as it rests in the filter add to it more boiling water, by a pint at a time until the filtrated liquor is the whole be exactly one pint wine measure, and in weight fifteen ounces; evaporating it away of that weight we cool the mixture.

This liquor so prepared will by every marking be equally strong, and by every experiment prove itself the identical fine medicine, which is now sold as a flavor; excepting only, that it will be clear and transparent, whereas that sold as a nostrum, is white and turbid, from the proportion of absorbent earth, which remains in it, and which being incapable of passing through the filter, is likewise incapable of passing the circulation & getting to the kidneys, so as to affect any stone, lodged either in them or in the bladder, and most of consequence be entirely use-

leb. The infusion therefore when thus made free from any earth, is a medicine more elegant; if in no other respects preferable to the varnished softum. But as the world is more apt to judge from appearances, this realists and fons may better approve the consistency when it is the glass to the eye, as this varnished by the nostrum magister; for their definition, I will observe, that if a quart of boiling water, be poured on the earth remaining in the glass, the whole then stirred together and distilled to stand a few minutes for the gummy parts to subside; and the supernatant liquor, which for some time will remain milky, be decanted from the softum, into a narrow-bottomed vessel, there will be afforded a substance that may be dried upon a chalk dish, of which if three drachms & fifteen grains be added to a pint wine measure, or fixating essence in weight of the filtered liquor before distilled; a medicine will be confected exactly the fons, as well in appearance as in effects, with the much celebrated Ithyphantic of Dr. Jurin and Mr. Cawthill.

In this medicine by the union of two alkalies; as in the aqua regia, by the union of two acids; we have a new solvent, capable of yielding effects in solution, which neither of its constituent principles separately used, could

product; and as the confluence principles of aqua regia, by their union together, not only acquire powers they had not before their union, but lose powers they had in their separate states; and probably that the confluence principles of the solvent do the same. It is therefore worthy of the ingenious to subject such articles to its power, which have hitherto proved indissoluble; for it is past all doubt, that of solvents and their powers, nothing can with certainty be said, but what has been proved to be so, by experience. We have already had these instances of this medicine having dissolved bones generated in the kidneys and bladder; and chalk stones which suffice in the goat, are similar in nature with them, though in some degrees softer; may it not therefore as it dissolves the one, dissolve the other also? From the bone principles may it not likewise destroy, that viscidity which causes the anchylosis or the joint, in many of which a gray matter of a chalky nature is found? Will it not in some degree reflect fluidity to the white of an egg when hardened by hot water? or attenuate and contract their flagrancy of lymph, which contains the scrophula? Experience only can determine.

common death, & fish-like manner; and experiments made on certain fishbones, under certain circumstances, may afford sufficient proofs to warrant its trial, in their and other similar complaints; by which it is not certain, but that judicious and skilful physicians may be enabled to discern some of those difficulties, which are now the opposite *Medorum & Charybdis*. The hope of which is the very probability as to render it the duty of practitioners, to subject such matters to the test, and to persevere in making experiments, till their difficulties are obtained; carefully regarding to make such experiments only, as can not endanger the life or safety of their fellow creatures. Yet it must be confessed, that although theory may sometimes give light, and lead empirical adepts, to the discovery of new methods of cure in most obscure complaints; yet if those who are not well versed in observation, from experience, suffer themselves to be guided by theory alone, they will be very liable to do mischief, by their attempt to do good; for if the theory they proceed upon be erroneous, the practice founded thereon cannot be otherwise, except by accident and consequently observation from it will be inevitably injurious; whereas on the contrary, if practice be

make the foundation of theory; the laws practice, will in similar cases, afford similar events; and if we are only wrong in theoretically ascertaining for the cause of events, without founding our practice upon fact realising, no evidence can then arise.

Regardless of this observation, it is the general practice of the present age, when any new hypothesis is offered to the world, after laying down the law, to attempt its proof by a relation of a number of facts, perhaps made for it's support, instead of first establishing the truth on which it is founded by a number of events, and afterwards accounting for them with proper reasons; as should ever to be the rule with physical writers. It is on this plan, after having had many instances of cures in calculus cases performed by the fulgurum prepared as it is prescribed by Dr. Jux, and taken as directed by Mr. Cheneb, and after having demonstrated what are the articles, and their properties, of which it consists, that I now take into consideration what is the nature of the stone; and attempt to explain by what means it acts, thereon to as to render it curable, by destroying the cohesion of it's particles.

Calculus concretions in the kidneys or bladder, constantly arising from some particle of

matter accidentally lodged therein; and very frequently, from a drop of granous extravasated blood, to the surface of which the earthy parts of the urine adhere; and by accumulating soon form a crust, or shell on its external surface; upon which, again in like manner by degrees other crusts or shells are formed; until by the slow evaporation of one upon another, the stone has acquired its fulness; which happens sooner or later according to the purity or impurity of the liquor drunk, the number of its excrements being afforded by them; for it is an consequence of our common liquids abounding with earthy particles, and of the tendency of these liquids to part with those particles; which depends also, on their greater or less fluidity in their own nature, and on the attractive power of the stone that is continuing, to accumulate them to itself, as well as on the solvent power of the liquids from which our urine is prepared; that stones are generated in the urinary passages. As a proof of this, there are few stones extracted from the urinary pass, which have not a small cavity in their very center; and which, do not when broke shew their whole substance to be formed like an onion; by means of one thin, or flaky shell, closely connected upon

another; & which several frustules or shells, as they have gradually and successively been formed; are found not only to be of different colours but also of different degrees of hardness, one from the other, according to the nature of the matter with which at different times their growth has been supplied, which is owing only to the different form of earth, dissolved in the several waters, with which the common beverage of the deceased, at different times, and in different places, has been prepared, or from some other such like accidental cause.

The stability of their concretions, seems to depend upon an oily matter, which acts as a cement and holds them together, and this oily matter they extract from the trout, which is a very mixed compound, and the washings of the blood itself. It is constantly received into our blood from our ulcers, and washed out of it by the urine; where being inhibited by it's earthy particles, they are rendered immovable or indissoluble in water, & retaining together; on the other hand, the separation upon of these particles one from the other, which is the fission of the frustules, depends, on the impregnation of the water with a principle, to which the oily matter has

a stronger affinity, than it has with the earthly mass that confines the stone. Of this, the human calcareous being gradually decomposed by the action of alkaline salts, is a strong evidence; for who is there with the least degree of chemical knowledge, but well knows that alkaline salts, more strongly than alkaline earths, attack and unite with all oily substances, and that oils, by their union with alkaline salts, lose the characteristic quality of oil, and acquire quite contrary properties to their own nature; such as that of being malleable both water, of mixing with and separating the particles of fleshy concretion with difficulty, and losing all power of inflammability. Being convinced of this, we cannot wonder how it is, that the strong lye-wash of soap dissolves the stone, nor can we wonder a reason, why salts disengaged with oil and converted into soaps, which is the evident result of their union, in proportion as they keep so united, lose their dissolving power upon fleshy concretion. The same reason, demonstrates likewise when calcareous concretions are removed by full doses of the lye-wash, how it is, that by impregnating the urine with alkaline salts, the oily part of the urine is engaged thereby and the accumulation

K. vi)

of any earthly substance than it into a collected body, so as to form a stone, must be prevented; even though it be not changed therewith to that degree, as would enable it to dissolve such concrements previously formed. From these considerations relative to the nature of the stone and it's solution, and a full conviction from facts of the power of the Balsam; I will now proceed to lay down a method founded thereon, by the assistance of which, the disease when present may most probably be cured; and also, how it may best be prevented, in bodies which have a tendency to it; together with the most easy and effectual means for the relief of it's concomitant symptoms.

For the reduction of a stone when formed, whether it be in the kidneys or bladder; the astringent solution which experience has shown to be both effectual, and safe, should be exhibited in such a quantity; as to impregnate all the vessels we drink, with it's properties; in that degree which is necessary to enable them, when they reach the seat of the disease, to arrest, and unite with the oily or coagulating principle of the stony matter; with which it has a stronger affinity, than with the astringent earth that constitutes the stone. For when of the oily matter, being applied

from the external surface of the stool, by the alkaline salt dissolved in the urine, it is, that the earthy particles with which it comes in contact, are naturally forced to repel & disengage themselves from each other, so as to be easily washed off from the stool, by the urine in it's passage; and in like manner, by a continuance of the same course, the whole substance is gradually excreted; and not in consequence of the urine being made to act, as by it's acrimony to corrode and wash the substance, to which opinion the generality of the world have subscribed, though if that were the case, it is certain that the very bladder itself would be first destroyed, from the known power of alkaline salts on animal fibres. To give ~~disengage~~ this excretive power, it is necessary to take the liquorice, from one to two lbs (peeled for a dose), and to repeat it in that quantity twice or three times in the day, as long as occasion may require the urine to be therewith impregnated; and as the urine in the human use of a very acid pungent taste, it is also necessary, it should be taken in a muriatic acid fluid; from which, by simple dilution it can be again washed out, after it is passed through the stomach, without it's being charged on it's surface, and such a vehicle experience has pro-

well well broth to be, which being in every one's power to have and unexpensive in its own nature, cannot be charged for the better; however, as the flexibility of one stomach is greater than of another, it will be necessary to add a greater or less quantity of the broth to make it agree, with particular individuals; likewise, although two tea spoonfuls ought never to be taken in less than half a pint of the broth; yet it is certain that it may sometimes be advantageously mixed in more the quantity, where it offends either the stomach, or the taste without it; and the broth should always be most carefully boiled when it is to be.

While this medicine is taking, the patient should upon no account eat anything that is acid or oily; if in his power to avoid it. His body should be exercised but little, and that gently, besides which that the course of the medicine should be determined to the kidneys & bladder, it is necessary the body should be kept cool, and this constantly; and it may be also of consequence, that both night and day, a perfect horizontal posture should as much as possible be avoided.

While this medicine is in use, constipation is a symptom that frequently attends, and

to guard against is in every material, which may effectually be done by repeated doses of charcoal and nitre, mixed in equal quantities, and taken from ten to twenty grains, once in twenty-four hours; or by a dose of leathive calomely once in two or three days, as soon as the urgency of the symptom is over.

If as too frequently happens in cases of the stone great pain, flaccidity, tension, or bloody urine should come on; an emollient anodyne glycer, should be immediately administered, and occasionally repeated, but if any excreta happening to pass from the kidneys, should stop in either of the ureters; or having passed the waters & bladder, should from its form or figure, stop in the ureters; an opiate should be taken in a full dose; and sweet oil, dissolved in the yolk of an egg, then diluted with barley water or mulier tea; together with soap either in a solid or liquid form, may be freely used at the first time; to the diastatic operation of which, a decoction of maple wood water will afford the greatest assistance; but before the use of such means in this disease, in case the astringent bark has not been long taken, it will be of the utmost consequence to open a vein;

though under a conduct of that remedy, it is an operation will be better managed; the physicians, being rather too attenuating in their own nature, to admit of a beneficial use of phlebotomy. All this holds equally true in regard to the cure of the gravel, as of the stone; for as the astringent dye does not deliver the stone, by means of its coagulating power; but as was before observed, by attracting the body or coagulating principles from the stone with more force, than it is attracted by the absorbent earth; the same degree of iteration, is requisite to give such that power upon a small, as upon a large calculus, though the necessity of keeping it so iterated, will be proportionably less persistent, in the cure of the gravel; as the gravel is in size, to that degree of the disease we call the stone.

But necessary as this method may be, to relieve those who have the stone; its cure is a very difficult thing, to the prevention of a stone generating in those who have it not and who may be disposed to it; for the cure of it when formed, depends on medicines operating on the nature of the disease, which is the fibrosis of the stone itself; whereas the prevention of it depends only on the operation of it on the solids & fluids of the body. Or in other words,

on a preservation of a proper fluid in the blood, or water of the urine, which is the washing of the blood; and of the kidneys or veses destined by nature to an excretion and exhalation; if we consider this, it is evident how much the purity of the water from earthy terrestrial particles, with which our common drink is prepared ought to be regarded; it being an indisputable maxim, good and salutary to dry the urine therefore of the patient want is indispensably necessary to such as have gravel, for their common beverage; but thereto advantageously may be added for the like, such like, a small quantity of any decent spirit, as brandy or rum; or if it be more eligible to the taste, a larger proportion of wine, provided it be of a dry sort and not loaded with sugar, but of a soft digestive nature; such as is the malaga, vulgarly called montrago, mescal and calavalla.

While we set careful that not to carry into the habit a load of flesh matter fit to supply to the digest; and to preserve a due tone and vigor in the fibers; we should omit nothing that can keep the particular parts subject to the diaphoresis clear of dross, a draught or two therefore of such clear water

as is above described, drunk in the open air
early every morning, will be of great use for
that purpose, as will also moderate exercise,
and especially gentle riding on horseback, or
bowling, if it be used at the same time; but
heavy laboring diversions, ought to be carefully
avoided, as they are generally weakening if
not altogether injurious to the kidneys. To
preserve such as are healthy, from the
contracture of this disease, the above rules will
happly well; but in bodies which have a prop-
erty to generate gravel or stoney excre-
tions, more may be necessary; for after
treating the constitution from any that has
been formed, to prevent the generation or
growth of such stones, instead of pure water,
water impregnated with the soluble part of
lime, made by the calcination of oyster shells
and lime, may be necessary; and if used will
destroy all tendency in the urine to form con-
cretions, as well as give strength to the kid-
neys, property to perform their functions, and
heal any injuries that any gall paroxysms may
have occasioned. If to take the lime water
alone, be at all disagreeable, it may be mixed
with milk, in the proportion of one third milk,
to two thirds lime water; by which the
natural taste will be covered, though perhaps
not without loss of some of its virtues.

It need not be used continually, but continued only for eight or ten days once in a month in the quantity of a pint in a morning; and if any symptom should happen to arise, from the removal of a stone previously formed; which might have lay dormant before even one of the urinary crises, and at that juncture might by some accident or other, have passed into it; so as to produce by its figure or force inflammation & pain, with their consequences; it can be no evidence against the efficacy of this practice, as it is a circumstance, that might have equally arrived if the medicine had not been in use, I therefore mention it, only to prevent un-biased consideration of the medicine, if the event should so unfortunately happen.

We have many instances in which the mortifery means for the cure of one disease may be productive not only of the useful change for health in the diseased portion; but also of such other alterations in the body, as may bring on, or constitute other diseases. I will therefore state this fully, with observing, that where the use of this liquor for the regular time no cure the stone, may have attenuated the blood too much; a vegetable

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L. 13

diet, milk, whey, solutions of oil in egg, brandy, drunks, and the like properly used; with the observance of a due of rest in a cool air, will soon effectually put a stop to it's ill consequences; the blood in that case being very similar to that of our sailors after close confinement in ships, and long living on the provisions, which is commonly called the sea scurvy; and which is constantly and quickly cured, on their arrival at land, and living in a free and unconfined air; by a strict adherence to such a regimen.



AN
ESSAY
ON THE
DIFFICULTY
OF
DETERMINING,
IF BODIES ARE POISONED,
FROM THEIR INSPECTION AFTER DEATH;
DEMONSTRATED IN THE CASE OF
SARAH FIELD,



On the difficulty, of ascertaining the effects of poison, from those of a mortal acci-
mny, in the animal fluids; demonstrated, in a
narration of the case of one Sarah Field,
who by a coroners inquest, was found *solo de
fili*, and ignoramusly buried in the pub-
lick high road with a stake through her body;
pertaining to the laws for the prevention
of suicide.

Sarah Field a poor girl about fifteen years old, was put out apprenticeship by the Parish of St. Lawrence in Ilchester in the County of Worfshire, to one Charles Grove a Gardener in the same town, from whom, thinking benefit ill treated, she on monday the fifteenth of November 1748, found means toelope, and on the wednesday following was forcibly taken back to him by the parish officers; whereby she was thrown into a violent rage, which she with great difficulty, through fear, in three degrees restrained on her arrival at his house.

A few hours before she was taken from her father to whom she flew in her elo-
quence, she eat a large slice of bread (bread
with dropping, or the fat which falls from meat

as it is roofing, and as soon as she came to her place, she was given by her midwife a dish of fat meat broth, of which she eat a part only, before she was so sick as to be forced to desist; the dictouch produced a vomiting which was followed by a purging, by which she evacuated both upwards and downwards at short intervals, in that night and the next day a very large quantity of a gross heterogeneous.

The complaint is a peculiar manner, of pain in her back and right side, of an unfeeling coldness, an inflexible starch and cramp in her legs; but the purging and vomiting wholly ceased on the Thursday evening, when the last stool she had was blackish and excessively watery.

Until the purging and vomiting began to diminish, she was exceeding violent; but as those evacuations decreased, she became gradually more quiet, and all her other symptoms mitigated, so that she slept comfortably on the Thursday evening for four hours, but on the Friday morning her breath grew difficult, which by fits continuing upon her all the day, caused a return of her refreshments in the evening, and a most miserable night, which terminated in her death early on the Saturday morning.

During the whole of her illness no attention was taken for her relief, but herself, of her own judgement supplied her with meat broth, boiled boiled in-beer, and tea; besides which she had nothing given her, but now and then a small quantity of an infusion of mint.

She was never observed to discharge blood either upwards or downwards, was free from convulsions from first to last; accused her friends to the master the serpent, and having a few days before her last by her self to buy some arsenic for the poisoning objects, she was frequently interrogated, if she had taken none of it herself; or, had used any other means of a similar nature for her destruction, which she as often, with obstinacy and firmly affirmed that she had not; though she firmly concluded that she had repeatedly thought of it, rather than to confirm under the cruel treatment she received from the family she was in.

The fine day she died, she was hurried into her coffin & taken to the church to be buried; but the minister despatching from some visitors that had passed, relative to the practice of the arsenic, and the ill treatment she had had, that she did not die a natural death, insisted at that was to perform the ceremony, and ordered, that the corps should be left in

the church till the inquest had been inquired into.

Soon after this, the report of their occurrence was brought to me wherupon I thought it my duty as a principal subscriber and the only one of the faculty of physicians in the Parish, to be siding as much as I could, in the discovery of the truth; that murder if any had been committed, might not go unpunished.

With this view I sent for the officers of the posse, as the child was one under their care, that they might inform me of facts circumstances of the affair as had then reached their knowledge; which they readily did, in the presence of two neighbouring surgeons who thinking with me, that there was reason for the suspicion, fervently offered the convenience to open and inspect the body, without any expense to the Parish.

On which I went with the officers to a justice of the peace, that by him they might be properly directed, in what manner to proceed. By the justice they were ordered on the constable, with whom the master had been before to acquaint him of the affair. The constable on their return brought me that gentleman's compliments, and his assurance that he would meet me at the church, where the corps

then lay, by nine the next morning; but at the same time, intimated, that they thought it was his desire to diffuse the mystery, and that they did not believe he would be there, as it was well known, that Garrow was a person in the interest of a member of Parliament, to whom the coroner was steward.

Whether or not these gentlemen had reason for this suspicion, I will not take upon me to aver; but shall leave to the opinion of the reader, after informing him, that a little before the hour appointed for the examination; I met another surgeon together with his apprentice as they were going to the church to open the body, but of which he said nothing to me, though I conversed with him on other matters, and though an atheist of this kind, the whole faculty ought always to be called; but private interest should influence the single inspector to make a full report, or any particular circumstance escape his eye, by which either the innocent may be condemned or the guilty acquited.

However, private as this business was designed to be transacted, a few minutes after we had parted, I was informed by one whom I had fixed on the watch, in consequence of the hint I had received from the officers, that the surgeon and his apprentice were then

alone with the body, which they were absurdly opposing; whenupon I called upon Mr. Savage an apothecary and took him with me to the church, where we came very opportunely; as the external segments were just dividing at the moment we entered, which we did not without evident danger to the operating surgeon; it being what he did not expect, having order'd the doors to be locked, to hinder any such admission; but as we were in the church, and the bafyneth was begun, he was obliged to go on with it; least, by so manifest an attempt to conceal such facts as might be discoverable on the inspection of the body, his integrity or judgment should be universally questionable.

He began therefore with observing, as the external segments were not perfectly divided, that they were in some parts discoloured, though not in any extraordinary degree for the corps of a person taken off by so sudden and violent an illness, and who had been dead so long.

He first laid open to our view the contents of both the thorax and abdomen, on which he remarked that the lungs were of a more livid hue, and fullier of blood than natural; but that they were neither mortified nor gangrenous, or any

other way is charged as to be capable of producing death.

He then took the lungs with the afferent air out of the chest, and desired me and three others, who by this time were come into the church, to observe, that the thorax had in it a very large and enormous quantity of coagulated blood and water, as indeed it had, but on my looking into the parts to see if no large blood vessel was divided, there was found a large incision into the cavity of the heart itself, and the coagulated blood which on death had collected in the large vessels, together with the lymph (which is provided by nature in the pericardium, that the contracture motion of the heart may not be hindered by any adhesion) had emptied themselves into the chest, and was the source of all the humour that were found in it, the quantity whereof was nothing惊异, to rest in the heart and pericardium after death.

When I made this remark, the surgeon affirmed that he had not on the pericardium, though I showed him an incision made into the very substance of the heart, I therefore asked him which was the pericardium, on which he put his finger on the external membrane of the heart, on the side that was not cut, and

said, that that was it; but observing it not loose and removable over the parts it covered, he qualified his saying; and owned that it was remarkable to see the pericardium so firmly adhere to the heart.

Upon this, I pointed to a membrane that was loose, and asked him, if that was not a part of the pericardium, which after examining he told me was a portion of the diaphragm; whereupon I desired him to lift up the heart, which having done, I shewed him more of the fuses, and told him, that the whole of it that was there would lap up the heart as in a bag, which upon trial he found, on the ocular demonstration whereof he was convinced of his mistake; and proceed to the examination of the parts contained in the cavity of the lower belly. Whereas the first thing he observed, was, that the bowels were in no part inflated or distended, nor did the corpus purge or distil dung.

The convex side of the liver was paler than ordinary, & the concave side near where the gall bladder adhered, and the intestines (which in their natural situation touch the gall bladder) were more yellow, and of a deeper dye than is usual in an healthy state.

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The gall bladder was near as large as an egg, and contained in it a pretty large quantity of parchment grain bile.

The stomach was the next part that was subjected to examination, it was not at all distended with humours, nor outwardly inflamed; though it had in it a dead worm, and about four ounces of a humor like that which is generally brought up in a bilious fever. The mucous of the stomach was not abraded, but it was tinged with the colour of the fluid it contained. Its villous coat was in no degree destroyed, nor was there any excretion or ulceration to be found on any part of it: but there was a pretty large black spot between its bottom and the pylorus, on the edge of which appeared a small inflammatory nucleus. This blackness, so firmly adhered to it's under surface, that it could not be separated from it, and being penetrated with a knife was found to be no deeper than the common glandular; but the surgeon thought that the stomach was somewhat thinner than ordinary, though not more so in one part than in another.

The whole alimentary tube appeared outwardly thin, and being opened with the knife from end to end proved free from inflammation, excretion, ulcer and coagulated blood, but

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it was remarkably empty; that a had nothing in it but dead worm or two, with a little mucus tinged with blood, of a somewhat deeper colour than usual; like that which was before described to have been in the stomach.

There was no extravasated haemorrhage in the abdomen among the witnesses, the pain was not discoloured, nor did the heart fail off. The kidneys were not examined while I and Mr. Savage were there, nor do I believe they were afterwards, for I had not left the church half an hour, before I met the fugitive apprentice on the street, who told me, that the body was then actually freed-up.

The inspection of the viscera being finished, the coroners inquest sat upon the body, to whom I first word, that I had been present at the opening of the corps and was ready if desired, to inform them of what I had observed, and my opinion thereon: but they returned me for answer, that they had taken the evidence of the fugitive employed by the master and of the girl herself; whereby they were sufficiently convinced, that the girl had poisoned herself, and should give it as their verdict, that she was *plus ou moins*, without hearing what any other person had to say about it; and which they immediately after did, in consequence whereof she

was buried the same evening with a knife through her body in the public highway, as by the law in so such case directed.

Having now gone through the various circumstances and symptoms attending this case, from the time the girl was taken ill to the time she died, all which I had from people who took care of her in her illness; and having given also a particular account of the proceedings had thereto, and of the depositions made by the doctor of the body from an ocular examination into it after death; it remains only to determine, if from these symptoms & their appearances, there is sufficient evidence to effect her death was, or was not caused by natural causes, which ought indisputably to be evident, before either a cruel malice should be ascribed of a suspicion of having given it to her servant; or the servant found guilty of having taken it herself. And to this determine it is absolutely necessary that we should be well acquainted not only with the state of bodies which die naturally, but also with the symptoms & effects which are constantly produced by animalcules naturally taken; as well as, if none of the animal fluids may not by any natural alteration in themselves, become the cause of similar effects; which if they should be capable of,

it will be requisite by accurately comparing them together, to discover, if there is not some one in particular, that may indubitably demonstrate the difference between them.

Supposing then, that all persons who profess to examine bodies on to impeach an accuser, as to accuse or charge any one of full murder, or to determine if any one has, or has not been poisoned, are, as they ought to be, well acquainted with the appearance of bodies who are entirely cut off in a state of health and with the symptoms of several diseases, I will proceed to observe.

That the celebrated Dr. Mead, in the second edition of his learned essay on poison, speaking of corrosive sublimate pag. 127. has the following words: The effects of this poison, when taken inwardly, are violent gripping pains with a diffusion of the belly, and a vomiting of a thin frothy matter, sometimes intermixed with blood with stools of the same, and an intolerable heat and thirst, with cold sweat, tremblings, convulsions &c. for proof of which he brings the following relation.

To a large dog was given a drachm of sublimate mercury mixed with a hen's heart, within a quarter of an hour after he fell into terrible wrenchings, calling up frequently a violent

body mucus every time more and more bloody, & purged the same downwards; till tired & spent out with this hard labour, he lay down quietly as it were to sleep, but died the next morning.

The abdomen being opened, a great quantity of extravasated blood was found between the liver & stomach, and between the duplicitate of the omentum about the stomach; the gills as well as the stomach were distended & full of a thick, bloody mucus; on the outside they were of a livid colour, within all over red and inflamed down to the very rectum. The fibrous coat of the stomach being taken off, between that and the nervous one, genuine blood was found in several places, as it was also here and there in the insulations between the three coats.

The like symptoms with thirst, and marshy soft farts of a burning corruption, followed with ulcer in the bowels, has been observed in a young man, who was poisoned with sulphure mixed with his meat.

After having God this to prove that sulphure is most certainly deleterious, he tells us, that it is nevertheless composed of bodies perfectly harmless, for fish, and quicksilver; and that it is from the gravity of the quicksilver, given to the fish in it's union with them.

without destroying the figure of the crystals; that it acquires such a corrosive way of acting, the operation of which on the body he does describes.

In short these crystals, which are to be considered as so many sharp knives or daggers wounding and stabbing the tender coats of the thorach, and thereby causing excessive pain, with an ablation of the natural meat, and (upon the constant fount of irritation) continual vomitings, &c., melt of necessity by licking here and there in the capillary vessels, stop the pulfage of the blood in several places; whereupon it inflames & produces little inflammations, which growing higher and higher increase quickly in perfect ulcers and gangrenes.

Again in pag. 124. of the first book, he says, that the destructive quality of arsenic is plainly such the same with that of sulphur corrosive, and as the salts therein together with the mineral particles do compose pernicious crystals, so without all doubt the regularity of this mineral gives a like form to the living bodies, which without that weight could be of small effect. The main difference is, that in arsenic we have an addition of sulphur; which does not only strengthen the action of the other parts, in that as a viscous kleopatrum unites together, but confining besides of many

hot and fiery corporcles promotes the inflammation of those wounds; which the crystalline glands make to the membranes of the stomach.

Hence it is evident, that although corrosive sublimate is a very vehement poison, yet action is most so; and Dr. Turner quotes an instance from a learned writer, wherein a wound made on the head with a pistol-wet with oil in which arsenic had been infused, brought on vomitings and purgings that proved mortal; and in the Edinburgh medical library, we have an instance of a person who by only touching with her tongue the tip of her finger that was all action, to discover what illness; though she was certain she fumigated none of it, that twelve hours after became suddenly vertiginous & was affected with most of the common consequence of taking it inwardly; and which by the several ingenious authors who have wrote on the subject are described to be prickling, twitching, irritating and burning sensations, a cruel pain and heat in the stomach with aching torture of the bowels which is frequently corrodes and ulcerates; a blackness &发烧ing of the tongue and lips, great dilation of the hypocondriac, a dryness of the jaws & throat, trismus, intermitting pulse, failure of strength, dimness of sight, rulse in the eye, hiccough, palpitation of the heart, cold sweat,

effects of the excretion, flurries, convulsions &c a bleeding of the whole body, a discolouration of the milk, falling off of the hair,斑 on the skin in several parts, a violent discharge both upwards & downwards, which is sometimes black, putridous and fibby like to carbon, and is accompanied with a gangrene & mortification of the stomach & intestines, by some or all of which the disease is generally closed with a painful death.

As these are the known symptoms of affected persons, let us now see if some of the animal fluids by any "natural alteration in themselves, may not be productive of the like effects.

That we are endowed and rendered sick, by means of those very things which are immediately necessary to life and health, is an observation as old as the time of Hippocrates. This holds true not only with regard to things that are external to the combination, but also to those internal fluids which are generated inward are immediately conducive to life and the preservation of health, as the blood, the lymph, and animal spirits. Besides which, there are also others in the body, which though not immediately, are yet so absolutely necessary for health

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that by their becoming fluid or porous they lay an unavoidable foundation for disease. Instead of all other influences of this, as well as to the point, I shall here confine myself to the bile; the influence and necessity of which respect to the preservation of life and health, are sufficiently known to every one who is acquainted with the natural and solid principles of physic; and as a proof of it's universal utility, there is no one animal in nature deficient of a bilious humour, by the virtue and energy whereof they are not only kept alive but preserved in health; Whatever therefore this humour is deficient, superabundant, or depraved, it must unavoidably be the cause of many disorders; but I shall here confine myself to the description of one only.

It sometimes happens, that the bile irregularly and in too large a quantity descends into the intestines from the gall-bladder, and is productive of very sensible symptoms; as a nausea, vertigo, vomiting, gripes, and a bilious diarrhoea; and if it be suppressed, as it often is by sudden fits of anger; it excites fevers, convulsions, spasms, and the most dangerous infections of the stomach, pain in the back, breast, right, coldness, insensible thirst, intense heat, violent



coughs and an erosion of the fracti; all which are excellently described by Hippocrates in his book of *short medicine*.

When says he, a certain bitter liquor, which we call bile is diluted; what softens, what heats and weakens forthwith gives the patient; and if it be crude, impure, and elevated above its natural state, or become unctuous; what despite, what gnawings of the viscera and the bowels will it not produce, besides the intolerable thirst, violent and frequent workings of gouta bancale and pains in the back.

Berthillon in *Art. Med. Bégla.* Tom. p. CM. 3d. gives us the case of a youth, who by an highly acrid bile was not only afflicted with an erosion of his stomach, but also with most of the first symptoms that are generally produced by poison. The same author tells us, that not only the bile but other humours frequently do affect the body in stomach; that one would be induced to believe that the persons afflicted with them must have taken a dose of poison.

The learned Flodman also observes, that it is natural for the bile when rendered highly acrid and offensive to excite symptoms like those produced by poison; for says he, it corrodes and softens the tender and flexible membranes of the stomach in a violent manner, and in the result of most intolerable & excruciating pains. And besides

Ob. 2. Cont. 2. gives us a proof, that the bile may be so corrosive, as to make an ulceration like aqua fortis when poured upon the earth. Many more authors might be here quoted to prove that these symptoms are producible by a redundant and retained bile acting on the living body, but as they are unnecessary, I will proceed to relate what observations have been made on the bodies of such as have died thereby.

Dickenswick affirms, that upon opening the body of a patient who died of a violent bilious paroxysm, he found the gall bladder filled with a deep green bile, and distended to the bulk of an hen's egg. The same author informs us, that in the Hospital in which he was examined, the bile lodged in the gall bladder of three of the patients who had died of bilious vomitings & purgings, was on their being distilled found highly green & magnoctious, and particularly that in a young daughter of one Mr. Glycher who died of a flux, in which the excretions were green, the gall bladder was distended to the bulk of an hen's egg, and filled with purulent bile; circumstances he had observed also in other children who had died of alike diarrhoea, and in fungi to which lives the choleric morbus had put a period.

Having now related the effects both of *uricæ* & bile, it remains only to compare them

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so far as to demonstrate wherein they differ. First then, it appears that the symptoms of the one, & the other may share themselves equally fading, and in the case of this poor girl, that there was no time for the quality of her delirium to be ascertained; but that there was a violent fit of passion & that aggravated, which was before shown to be sufficient to produce an encæliowing of the bile & to evident.

Secondly, a nausea, eructation, an induration of the hypochondrium, pains in the back, stomach and bowels; hæmorrhage, rigor, coldness, insatiable thirst, sweat, convulsions, anæmia, violent vomitings & purgings with an erosion of the gall, stomach & fauces, are symptoms peculiar to one, as well as the other.

Thirdly, prickling, swelling and burning symptoms, giddiness, dimness of sight, solids in the ears, vertigo, drowsiness, feelings of the vapours & whole body; black eruptions, discoloured nails, a falling off of the hair, and a ragged texture of the viscera particularly about the stomach, with the symptoms before mentioned to be in common to both, in a more violent degree than ordinary; together with a great discharge of humours mixed with blood, and a violent death in a few hours; are the

common distinguishing effects of arsenic poison taken into the body.

Fourthly, the particular symptoms produced by the bile are a great discharge of yellow & green humour upwards & downwards, a pain fixed rather in the back & right side, than the stomach, from the situation of the liver and gall-bladder; and which are observed, to continue longer before they disappear when produced by the bile, than when they are the effects of arsenic, which generally kills in twenty four hours.

On the whole therefore it is manifest, that when arsenic is the cause of the symptoms before treated, the discharge both upwards & downwards is black, and mixed with blood; which it was not in this case, but it was of a green colour without any blood in it, like what has been before described to be producible by vitiated bile.

When arsenic is the cause, the pain is principally vehement in the stomach, but in this case it was more acute in the back & right side where the liver & gall-bladder are situated, than in the stomach.

When arsenic is the cause, giddiness, dimness of sight, vertigo, convulsions & the many nervous symptoms before described to be in common to empy poison, or some of them,

generally attend; but in this case, the patient had no symptoms of the kind, except cramps in her legs, which are generally troublesome to every one in whom the liver is affected.

When arsenic is the cause, black spots appear in many parts, & the body feels either partially or universally; yet neither of them happened to this poor girl.

Lastly when arsenic is the cause, the patient seldom recovers under its effects above twenty four hours, but this patient happened to it near these times as long.

By inquiring bodies - which have been laid by police, it has been generally observed, that the stomach has been found swollen, the natural meatus thereof & of the whole intestine abraded, inflamed, & ulcerated; & ulcerations in several parts of the viscera, with flagrations & extravasations of blood & other in one place or other, and lastly that the nails have been discoloured and the hair loofa, neither of which circumstances attended here.

On the other hand, every alteration which authors describe to have been made by the halo, when that is in fault, unless it be an excoriation, were found in this body, and though an excoriation is one of the most common symptoms of poison, yet none appeared in any part of the alimentary tube, nor was there any one change in it that could impress a person who was not

previously predicted, that she was poisoned; to believe that she was so, unless it was the blackbark mentioned to be found in the stomach; and as that was not deprived of its mass, or had within the last five of a previous ulceration, it cannot be looked upon as a mortification arising from an arterial contusion; since we are convinced, that the blood by stagnation from many natural causes, may without the last ulceration produce a mortification that has all the appearance with the blackbark found in the child's stomach. To all this I must add, that bilious complaints were when this girl died, beginning to be epidemic in the same town. Wherefore on impartially considering every circumstance, there is much stronger reason to believe, that she died of a bilious complaint; than that her death was the effect of any poison.

But if from what has been advanced, this opinion should not be inflexible; consider it is, that the many facts and circumstances recited in her case, are too strong to have the contrary admitted, especially if we recollect, that in all such cases where proof is not absolutely convincing, it is the duty of a physician to form his judgement with prudence and deliver it with diffidence; and that by all law both divine and human, it is infinitely more meritorious, to absolve those who are guilty, than to condemn those who are harsh. It being a maxim where

any thing rests on suspicion or doubtful evidence, that the personise is always in favour of innocence, a stronger example of which, and in a more fatal case, is no where to be found, than in the instance given us by Dr. Goddall in his history of the royal college of physicians in London, wherein he tells us:

That the opinion of the learned body being asked in regard to the case of M. Lane, who was supposed to die by poison, that although arsenic was found in his medicine, though his mouth, stomach & bowels were inflamed, ulcerated & mortified, and though he had many stagnations of blood in them, yet it was their joint opinion that from the proofs found on the inspection of the body only, they could not certify definitely of the poison.

What evidence or judgement should therefore be given, by any person who undertakes to examine a body by himself, if even their conclusions of poison are not found in it? And what opinion shall we form of a jury, who in cases of suspected murder, shall then have against any evidence that may be offered the power to exclude them to do justice?

To the honest & judicious of them who may have the truth, with the reflection, that it may be so to be answered for hereafter; I leave the reply.

THE END.



661

